IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Sachin Navin Chheda et al.	Examiner: Anand B. Patel
Serial No.:	10/684,768	Group Art Unit: 2116
Filed:	October 14, 2003	Docket No.: 200308767-1
Due Date:	**February 15, 2007**	**Confirmation: 3359**
Title:	SERVER CARD POWER SWITCH	

APPEAL BRIEF UNDER 37 C.F.R. §41.37

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir/Madam:

This Appeal Brief is submitted in support of the Notice of Appeal filed on December 15, 2006, appealing the final rejection of claims 1-2, 9-10, and 12-13 of the above-identified application as set forth in the Final Office Action mailed October 10, 2006.

The U.S. Patent and Trademark Office is hereby authorized to charge Deposit Account No. 08-2025 in the amount of $500.00 for filing a Brief in Support of an Appeal as set forth under 37 C.F.R. §41.20(b)(2). At any time during the pendency of this application, please charge any required fees or credit any overpayment to Deposit Account No. 08-2025.

Appellant respectfully requests consideration and reversal of the Examiner's rejection of pending claims 1-2, 9-10, and 12-13.

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REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, LP having a principal place of business at 20555 S.H. 249 Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellant that will have a bearing on the Board's decision in the present Appeal.

STATUS OF CLAIMS

In a Final Office Action mailed October 10, 2006, claims 1-2, 9-10, and 12-13 were finally rejected, claims 19-28 were allowed, and claims 3-8, 11, and 14-18 were objected to (but considered allowable if rewritten in independent form including any base claim limitations and intervening claims limitations). Accordingly, claims 1-29 are pending in the application, with finally rejected claims 1-2, 9-10, and 12-13 being the subject of the present Appeal.

STATUS OF AMENDMENTS

No Responses have been filed nor amendments entered subsequent to the Final Office Action mailed October 10, 2006.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The Summary is set forth as an exemplary embodiment as the language corresponding to independent claims 1 and 13. Discussions about elements of claims 1 and 13 can be found at least at the cited locations in the specification and drawings.

The present invention, as claimed in independent claim 1, recites a server comprising a server card (12 in Figure 1; 302-308 in Figure 4) and an electronic switching mechanism (100 in Figure 2; 200 in Figure 3; 400 in Figure 6). The server card is removably insertable

into a server chassis (14) and comprises at least one of a blade server and a brick server (12 in Figure 1; 302-308 in Figure 4). The electronic switching mechanism (100 in Figure 2; 200 in Figure 3; 400 in Figure 6) is disposed on the server card (12 in Figure 1; 302-308 in Figure 4) and configured to cause three power states of the server card. The three power states include a fully operational state (A, 102), a standby state (B, 104), and a shutdown state (C, 106). In the fully-operational state, a system power (226 in Figures 3, 6) of the server card (12 in Figure 1; 302-308 in Figure 4) is enabled and a standby power (222 in Figures 3, 6) of the server card (12 in Figure 1; 302-308 in Figure 4) is enabled. In the standby state, the system power (226 in Figures 3, 6) of the server card (12 in Figure 1; 302-308 in Figure 4) is disabled and the standby power (222 in Figures 3, 6) of the server card (12 in Figure 1; 302-308 in Figure 4) is enabled. In the shutdown state, the system power (226 in Figures 3, 6) of the server card (12 in Figure 1; 302-308 in Figure 4) is disabled and the standby power (222 in Figures 3, 6) of the server card is disabled. (Elements 12, 14 at Appellants' Specification Page 3, lines 18-20 with Figure 1 and Elements 302-308 at Appellants' Specification Page 11, line 6 – Page 12, line 23 with Figure 4; Elements 100, A/102, B/104, C/106 at Appellants' Specification Page 5, lines 30 –Page 6, line 25 with Figure 2; Elements 200, 226, 228 at Appellants' Specification Page 7, line 7 – Page 11, line 5 with Figure 3 and at Page 14, lines 11-15 with Figure 6; Element 400 at Appellants' Specification Page 13, line 31 – Page 17, line 2 with Figure 6).

The present invention, as claimed in independent claim 13, recites a method of managing power for at least one server card (12 in Figure 1; 302-308 in Figure 4). The method comprises removably inserting at least one server card (12 in Figure 1; 302-308 in Figure 4) within a server chassis (14) and operating an electronic switching mechanism (100 in Figure 2; 200 in Figure 3; 400 in Figure 6) on the at least one server card (12 in Figure 1; 302-308 in Figure 4). The electronic switching mechanism (100 in Figure 2; 200 in Figure 3; 400 in Figure 6) acts to alternately: (1) activate, via a first state of the electronic switching mechanism, a fully-operational state (A, 102 in Figure 2) of the at least one server card (12 in Figure 1; 302-308 in Figure 4), in which a system power (226 in Figures 3, 6) of the at least one server card (12 in Figure 1; 302-308 in Figure 4) is enabled and a standby power (222 in Figures 3, 6) of the at least one server card (12 in Figure 1; 302-308 in Figure 4) is enabled;

(2) activate, via a second state of the electronic switching mechanism, a standby state (B, 104 in Figure 2) of the at least one server card (12 in Figure 1; 302-308 in Figure 4), in which a system power (226 in Figures 3, 6) of the at least one server card (12 in Figure 1; 302-308 in Figure 4) is disabled and a standby power (222 in Figures 3,6) of the at least one server card (12 in Figure 1; 302-308 in Figure 4) is enabled; and (3) activate, via a third state of the electronic switching mechanism, a fully shutdown state (C, 106 in Figure 2) of the at least one server card (12 in Figure 1; 302-308 in Figure 4), in which a system power (226 in Figures 3, 6) of the at least one server card (12 in Figure 1; 302-308 in Figure 4) is disabled and a standby power (222 in Figures 3, 6) of the at least one server card (12 in Figure 1; 302-308 in Figure 4) is disabled. (Elements 12, 14 at Appellants' Specification Page 3, lines 18-20 with Figure 1 and Elements 302-308 at Page 11, line 6 – Page 12, line 23 with Figure 4; Elements 100, A/102, B/104, C/106 at Appellants' Specification Page 5, lines 30 –Page 6, line 25 with Figure 2; Elements 200, 226, 228 at Appellants' Specification Page 7, line 7 – Page 11, line 5 with Figure 3 and at Page 14, lines 11-15 with Figure 6; Element 400 at Appellants' Specification Page 13, line 31 – Page 17, line 2 with Figure 6)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Claims 1-2 and 12-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Humpherys et. al., U.S. Patent 6,226,699 (the Humpherys Patent) in view of Wierzbicki et. al., U.S. Patent 6,789,206 (the Wierzbicki Patent).

II. Claims 9-10 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over the Humpherys Patent, in view of the Wierzbicki Patent and Dunstan U.S. Patent Publication 2004/0403345 (the Dunstan Publication).

ARGUMENT

I. The Applicable Law

The Examiner has the burden under 35 U.S.C. §103 to establish a *prima facie* case of obviousness. *In re Fine,* 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Three criteria must be satisfied to establish a *prima facie* case of obviousness. First, the

Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would teach, suggest, or motivate one to modify a reference or to combine the teachings of multiple references. *Id.* Second, the prior art can be modified or combined only so long as there is a reasonable expectation of success. *In re Merck & Co., Inc.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Third, the prior art reference or combined prior art references must teach or suggest all of the claim limitations. *In re Royka,* 490 F.2d 981, 180 USPQ 580 (CCPA 1974). These three criteria are also set forth in §706.02(j) of the M.P.E.P.

II. Rejection of Claims 1-2 and 12-13 under 35 U.S.C. § 103 (a) as being unpatentable over the Humpherys Patent in view of the Wierzbicki Patent

Claim 1

Appellants' independent claim 1, recites a server comprising a server card and an electronic switching mechanism. The server card is removably insertable into a server chassis and comprises at least one of a blade server and a brick server. The electronic switching mechanism is disposed on the server card and configured to cause three power states (e.g., fully operational, standby, and shutdown) of the server card. Each of the three power states include both a system power and a standby power of the server card, each of which are enabled or disabled in each of the respective three power states of the server card.

In the Humpherys Patent, a server 10 includes a remote server management board 55 that provides remote console features to allow a remote computer to remotely access and administrate the server 10 without operating system intervention or dependence. See the Humpherys Patent at Column 1, lines 53-62 and Column 3, lines 14-15. The remote server management board 55, which is disposed on a server 10, includes a battery back up system with a battery 130 to maintain operation of itself (the remote server management board 55) even when the server 10 is without power. See the Humpherys Patent at Column 4, lines 53-62. This battery back up system is described in more detail below.

Unlike the electronic switching mechanism recited in the claim limitations of Appellants' independent claim 1, the remote server management board 55, and particularly its bus isolation circuit 75 of the Humpherys Patent, does not act to control the power of server

10 in the Humpherys Patent in the same manner in which Appellants' server card is controlled via its electronic switching mechanism to move the server card between a fully operational state, a standby state, and a shutdown state, as recited in Appellants' independent claim 1.

In particular, the Humpherys Patent is directed to a bus isolation circuit 75 for isolating operation of the remote server management board 55, including the microprocessor 80 of the board 55, from the loss of power or other faults of the server 10 (see the Humpherys Patent at Column 4, lines 63-66), which is substantially different than acting as the primary control over the power of the server 10. As explained in greater detail below, Appellants respectfully submit that the interpretation of the Humpherys Patent (as asserted in the Office Action) is misplaced, as the elements cited in the Office Action (voltage selectors 150, 155 in Figure 3 of the Humpherys Patent) do not act to control the power of the server 10, but rather act to supplement power to the remote server management board 55 independent of the power state of the server 10.

Accordingly, the Humpherys Patent is directed at solving a problem (maintaining power and signal control on a remote server management board 55, not the server 10) substantially different than the problem (controlling the power states of a server card, not providing back up power to a remote server management device) addressed by Appellants' independent claim 1, as supported by the present specification.

First, as noted in the Background of the Invention of the Humpherys Patent, "in some cases, a server may lose power or become inoperable for some other reason. In such cases, it is desirable to allow continued operation of the remote server management device to allow continued operation of the remote server management device so that the problems leading to the server fault can be observed." See the Humpherys Patent at Column 1, lines 20-26. Accordingly, some remote server management devices such as remote server management board 55 (Figure 1) have a battery backup system to allow continued operation of the remote server management board 55 independent of the server in the event that the server 10 loses power. See the Humpherys Patent at Column 3, lines 15-18 and at Column 1, lines 26-29. Moreover, because the remote server management device 55 connects to the server 10 via a PCI bus 40 (Figure 1), the Humpherys Patent explains that to provide uninterrupted operation of a remote server management device (e.g., remote server management board 55), the

remote server management device must be isolated from the bus without deleteriously affecting the processing of its transactions. See the Humpherys Patent at Column 1, lines 33-37.

Because of these problems, the Humpherys Patent provides a bus isolation circuit 75 on its remote server management board 55 to isolate remote server management board 55 from PCI bus 40 of server 10 (see the Humpherys Patent at Column 1, lines 49-51). The bus isolation circuit 75 includes the previously identified battery back up system, which is described and illustrated in association with Figure 3 at Column 4, lines 13-63. As illustrated in Figure 3, the battery back up system (as part of the bus isolation circuit 75) comprises numerous components (comparator 135, boost regulator 145, battery switch 140, battery 130, voltage selectors 150, 155, and voltage regulator 160) which work together to provide "high and low voltage outputs on lines 165 and 170 with the high voltage on line 165 being about 5 volts and the low voltage on line 170 being about 3.3 volts." See the Humpherys Patent at Column 4, lines 26-44. These voltage outputs on lines 165 and 170 are available for continued functioning of remote server management board 55 while the server 10 is without power or otherwise not operating properly.

To provide the high voltage on line 165, voltage selector 150 selects a higher of the voltage on the 12 volt supply line 120 and the battery 130 while the voltage selector 155 selects the higher of the voltage on the 5 volt supply line 125 and the battery 130. A voltage regulator 160, coupled to the voltage selectors 150, 155, provides the high voltage (e.g., 5 volts) and low voltage (3.3 volts) on lines 165, 170, respectively. See the Humpherys Patent at Column 4, lines 32-36.

This power back-up system (of the bus isolation circuit 75 of the remote server management board 55, and not of server 10) is activated via a battery switch 140 only when a voltage on a 5 volt supply line 125 from PCI connector 70 of server 10 drops below a threshold, thereby indicating that the server has lost power or is not operating properly. See the Humpherys Patent at Column 4, lines 20-25. The battery 130 (activated via battery switch 140) is charged via 5 volt supply line 125 and boost regulator 145 (see the Humpherys Patent at Column 4, lines 29-33).

Accordingly, despite the assertions in the Office Action regarding the role of voltage selectors 150 and 155 in Figure 3 of the Humpherys Patent, it is abundantly clear from the

specification of the Humpherys Patent that the remote server management board 55, and particularly the components of the battery back up system (comparator 135, boost regulator 145, battery 130, battery switch 140, voltage selector 150, voltage selector 155, voltage regulator 160 in Figure 3) of the bus isolation circuit 75 (illustrated in Figure 3) do not control the power states of the server 10, but rather are directed to maintaining backup power to microprocessor 80 and other components of remote server management board 55 regardless of and independent of the power state of the server 10.

Accordingly, Appellants respectfully submit that the Humpherys Patent fails to teach or suggest an electronic switching mechanism disposed on a server card and configured to control three power states (e.g., fully operational, standby, and shutdown) of the server card, as recited in Appellants' independent claim 1. Moreover, by teaching a battery backup supply for a remote management server board 55, and not for a server 10, the Humpherys Patent actually teaches away from Appellants' independent claim 1.

In further contrast to the Humpherys Patent, Appellants' independent claim 1 also specifies that its server card is at least one of a blade server and a brick server. Accordingly, in addition to the previously stated deficiencies of the Humpherys Patent regarding Appellants' independent claim 1, it was admitted in the Office Action that the Humpherys Patent fails to disclose a server card, as recited in Appellants' independent claim 1.

The Wierzbicki Patent fails to cure the deficiencies of the Humpherys Patent.

First, the Wierzbicki Patent fails to disclose a server card, and particularly a blade server or a brick server, as described in Appellants' specification and as recited in the claim limitations of Appellants' claim 1.

Instead, the Wierzbicki Patent discloses a compute element 11 slidably disposed in a stacked relationship in rack console 31 (see the Wierzbicki Patent at Figures 1-2, Column 6, lines 16-21, and Column 1, lines 31-42). Each compute element 11 has a size of 2U, 1U, or 4U, which refers to the standard dimensions of rack servers, i.e., servers that fit in a rack (see the Wierzbicki Patent at Column 5, line 63 – Column 6, line 3). The size designation U refers to a height of 1.75 inches, so that a rack server having a size of 1U would be about 1.75 inches thick while a rack server having a size of 2U would be about 3.5 inches thick, and so on. See the article titled "The Blade Server Debate", by Lamont Wood in Cutting Edge

Server Farms, *June 01, 2002,* available at http://www.ddj.com/dept/architect/184411655, a copy of which is provided in the Evidence Appendix.

In addition, in the Wierzbicki Patent, compute element 11 includes bulkier components, such as a block of multiple fan assemblies 51 (e.g., eight fan assemblies arranged in a 2 x 4 configuration as shown in Figure 3 as disclosed at the Wierzbicki Patent at Column 7, lines 6-18). In combination with the descriptive rack sizing information noted above, the placement of fan assemblies 51(e.g., cooling units) on compute element 11 puts compute element 11 into the category of a rack server, in a manner consistent with how the terms blade server and rack server are used by those skilled in the art.

To this end, numerous articles from 2002 (and forward in time) heralded the impact of blade servers on the computing industry, and describe the basic distinctions between blade servers and the more conventional rack servers. In these articles, a blade server is described as having one or more processors, memory, and network connections and with numerous blade servers fitting into the space formerly occupied by one or two rack servers. Moreover, in almost every instance, blade servers are described as having access, via a server chassis, to resources shared with other blade servers. These **shared resources** include power supplies, buses, and **cooling units**, which are provided on the chassis of the server rack. For example, see the articles: (1) "Cutting edge?", dated March 9, 2002, available at http://www.information-age.com/article/2002/march/cutting_edge ; and (2) IBM System, BladeCenter, "What is a blade server", available at www-03.ibm.com/servers/eservers/bladecenter (in one excerpt stating," Slim, hot-swappable blade servers fit in a single chassis like books in a bookshelf — and each is an independent server, with its own processors, memory, storage, network controllers, operating system and applications. The blade server simply slides into a bay in the chassis and plugs into a mid- or backplane, **sharing** power, **fans**, floppy drives, switches, and ports with other blade servers"). A copy of these articles is provided in the Evidence Appendix.

In addition, the Hensley U.S. Patent 6,613,984 (the Hensley Patent) that was cited in the Office Action actually supports Appellants' use of the term "blade server" as omitting a cooling unit. In particular, after stating that "blade servers are comprehensive computing systems that include [a] processor, memory, network connections, and associated electronics, all mounted on a single motherboard called a blade", the Hensley Patent goes on to explain

that "the server blade . . . along with other blades [is] typically installed in a rack-mountable enclosure that houses multiple blades that share common cabling, power supplies, and cooling fans. With its modular, hot-pluggable architecture, the easily accessible blade server offers increased computing density while ensuring both maximum scalability and ease of management." See the Hensley Patent at Column 1, lines 33-47. Indeed, the very act of removing cabling, cooling fans, and power supplies from each blade server (for placement on a chassis of a rack-mounted enclosure to be shared by the multiple blade servers) is central to the blade server creating this new, high density computing environment and hot-swappable capability.

Accordingly, with this understanding of a blade server, Appellants respectfully submit that the Wierzbicki Patent fails to teach or suggest a blade server.

In addition, as described below, in the context of the present patent application, Appellants' have used the term "blade server" in their claims and described that term in their specification in a manner wholly consistent with the use of the term by those skilled in the art, as explained above). Appellants' specification includes at least two definitions of the term blade server, that are consistent with the other passages of Appellants' specification and Figures that define a blade server as omitting conventional server components such as cooling units. At Appellants' specification at page 1, lines 13-21, the Background states that "each blade server is a card that carries basic server components such as central processing unit and memory. The chassis includes components common to all servers, such as power, cooling units, input/output circuitry, so that each blade server need not carry these bulkier components." At Appellants' Specification page 3, lines 20-25 in the Detailed Description, Appellants further define the term "blade server" in the context of describing server card 12, in association with Figure 1, as "a blade server or brick server, or other high density server module residing on a circuit card that is removably insertable into a server chassis and that has server computing components (e.g., CPU, memory, network connections) separate from elements on the server chassis 14 that are shared with multiple server cards (e.g. power supply, cooling units). As illustrated by Figure 1, and as described at page 5, lines 9-16 of Appellants' specification: (1) "server chassis 14 comprises frame 85 having front end 86, back end 88, as well as backplane 91 or bus including components such as

power supply 90, cooling unit 92, and input/output module 94"; and (2) "Likewise, cooling units 92 provides forced air ventilation to server cards 12 within server chassis 14."

Accordingly, Appellants have clearly defined, in both the description and Figures of the application, a blade server and a server chassis in which certain bulkier resources, such as a cooling unit, are provided on the server chassis to be shared among multiple blade servers that are removably mounted within the server chassis. Those shared resources are not mounted on the blade server for the very purpose of reducing the size and simplifying the design of the blade server to achieve higher density computing (see Appellants' specification at page 1, lines 13-22) by placing many more blade servers (e.g., 10 to 20) in the place formerly occupied by one or two rack servers. Achieving a low profile for the blade server via omitting these bulkier components (e.g., cooling units, power supplies, cabling) enables, in part, the hot swapping feature of the blade server that allows considerably more convenient insertion and removal of the blade server relative to the more cumbersome insertion and removal of a rack server. See Appellants' specification at page 1, lines 23-25.

For these reasons, the Wierzbicki Patent fails to teach or suggest the claim limitations of a server card comprising at least one of a brick server and blade server, as recited in Appellants' independent claim 1.

Even if the Wierzbicki Patent did disclose a blade server, which it does not as demonstrated above, the Wierzbicki Patent also fails to disclose an electronic switching mechanism in the manner recited in Appellants' independent claim 1, and therefore additionally fails to cure the deficiencies of the Humpherys Patent regarding Appellants' independent claim 1.

In particular, the Wierzbicki Patent discloses: (1) an element controller 91 to control various power states of compute element 11, among other functions (see the Wierzbicki Patent at Column 9, line 62 – Column 10, line 21); and (2) a power button 53 to indicate and help switch power states of the compute element 11 (e.g., Column 10, line 29 – Column 13, line 23, which generically describes the various power states of an ACPI specification). However, the Wierzbicki Patent fails to disclose an electronic switching mechanism controlling power states (fully operational, standby, and shutdown) in which a system power and a standby power are enabled, and disabled, respectively, in the respective power states, as recited in Appellants' independent claim 1.

Because the Humpherys Patent fails to teach or suggest the claim limitation of a server card (including a blade server or a brick server) in Appellants' claim 1, and the Wierzbicki Patent fails to teach or suggest the claim limitation of a server card (including a blade server or a brick server) in Appellants' claim 1, one cannot combine the Humpherys Patent and the Wierzbicki Patent to arrive at Appellants' independent claim 1. Likewise, because the Humpherys Patent fails to teach or suggest the claim limitation of an electronic switching mechanism in the manner recited in Appellants' claim 1, and the Wierzbicki Patent fails to teach or suggest the claim limitation of an electronic switching mechanism in the manner recited in Appellants' claim 1, one cannot combine the Humpherys Patent and the Wierzbicki Patent to arrive at Appellants' independent claim 1.

Moreover, the Office Action asserted that one skilled in the art would be motivated to combine the Humpherys Patent and the Wierzbicki Patent. In particular, in the Office Action mailed on October 10, 2006, it was asserted that an advantage of the Wierzbicki Patent is the ability to produce a computing element that is cheaper and friendlier than the prior art, and that it would have been obvious to modify the Humpherys Patent with the server card as taught by the Wierzbicki Patent with the motivation to modify being to cut costs and increase user control and understandability.

This alleged motivation amounts to identifying a "shared advantage" between the two reference patents with the shared advantage being to reduce costs and make the devices easier to use. However, this "shared advantage" would potentially justify the combination of any two references, regardless of how unrelated the two reference patents are, because nearly all improvements are directed to making something cheaper, understandable, and user friendly. A motivation this broad omits the core aspect of why or how one skilled in the art would look to prior art references, which is to find a solution to a problem to be solved. In the instance of Appellants' claimed invention, the issue of controlling the power states of the server card itself is a problem distinct from providing a power backup system for a remote server management board 55 (and not for server 10) as in the Humpherys Patent, while the Wierzbicki Patent is directed to a power button 53.

For these reasons, one would not combine the Humpherys Patent and the Wierzbicki Patent and even if they did so, they would not arrive at Appellants' independent claim 1. Accordingly, the Humpherys Patent and the Wierzbicki Patent fail to teach or suggest

Appellants' independent claim 1, and therefore Appellants respectfully submit that claim 1 is patentable and allowable over the Humpherys Patent and the Wierzbicki Patent.

Dependent claims 2 and 12 are believed to be allowable because they further define patentably distinct independent claim 1, which is believed to be allowable for the reasons stated above.

Claim 13

Appellants' independent claim 13 recites a method of managing power for at least one server card. The method comprises removably inserting at least one server card within a server chassis and operating an electronic switching mechanism on the at least one server card. The electronic switching mechanism acts to alternately: (1) activate, via a first state of the electronic switching mechanism, a fully-operational state of the at least one server card, in which a system power of the at least one server card is enabled and a standby power of the at least one server card is enabled; (2) activate, via a second state of the electronic switching mechanism, a standby state of the at least one server card, in which a system power of the at least one server card is disabled and a standby power of the at least one server card is enabled; and (3) activate, via a third state of the electronic switching mechanism, a fully shutdown state of the at least one server card, in which a system power of the at least one server card is disabled and a standby power of the at least one server card is disabled.

In the Humpherys Patent, a server 10 includes a remote server management board 55 that provides remote console features to allow a remote computer to remotely access and administrate the server 10 without operating system intervention or dependence. See the Humpherys Patent at Column 1, lines 53-62 and Column 3, lines 14-15. The remote server management board 55, which is disposed on a server 10, includes a battery back up system with a battery 130 to maintain operation of itself (the remote server management board 55) even when the server 10 is without power. See the Humpherys Patent at Column 4, lines 53-62. This battery back up system is described in more detail below.

Unlike the electronic switching mechanism recited in the claim limitations of Appellants' independent claim 13, the remote server management board 55, and particularly its bus isolation circuit 75 of the Humpherys Patent, does <u>not</u> act to control the power of server 10 in the Humpherys Patent in the same manner in which Appellants' server card is

controlled via its electronic switching mechanism to move the server card between a fully operational state, a standby state, and a shutdown state, as recited in Appellants' independent claim 13.

In particular, the Humpherys Patent is directed to a bus isolation circuit 75 for isolating operation of the remote server management board 55, including the microprocessor 80 of the board 55, from the loss of power or other faults of the server 10 (see the Humpherys Patent at Column 4, lines 63-66), which is substantially different than acting as the primary control over the power of the server 10. As explained in greater detail below, Appellants respectfully submit that the interpretation of the Humpherys Patent (as asserted in the Office Action) is misplaced, as the elements cited in the Office Action (voltage selectors 150, 155 in Figure 3 of the Humpherys Patent) do not act to control the power of the server 10, but rather act to supplement power to the remote server management board 55 independent of the power state of the server 10.

Accordingly, the Humpherys Patent is directed at solving a problem (maintaining power and signal control on a remote server management board 55, not the server 10) substantially different than the problem (controlling the power states of a server card, not providing back up power to a remote server management device) addressed by Appellants' independent claim 13, as supported by the present specification.

First, as noted in the Background of the Invention of the Humpherys Patent, "in some cases, a server may lose power or become inoperable for some other reason. In such cases, it is desirable to allow continued operation of the remote server management device to allow continued operation of the remote server management device so that the problems leading to the server fault can be observed." See the Humpherys Patent at Column 1, lines 20-26. Accordingly, some remote server management devices such as remote server management board 55 (Figure 1) have a battery backup system to allow continued operation of the remote server management board 55 independent of the server in the event that the server 10 loses power. See the Humpherys Patent at Column 3, lines 15-18 and at Column 1, lines 26-29. Moreover, because the remote server management device 55 connects to the server 10 via a PCI bus 40 (Figure 1), the Humpherys Patent explains that to provide uninterrupted operation of a remote server management device (e.g., remote server management board 55), the remote server management device must be isolated from the bus without deleteriously

affecting the processing of its transactions. See the Humpherys Patent at Column 1, lines 33-37.

Because of these problems, the Humpherys Patent provides a bus isolation circuit 75 on its remote server management board 55 to isolate remote server management board 55 from PCI bus 40 of server 10 (see the Humpherys Patent at Column 1, lines 49-51). The bus isolation circuit 75 includes the previously identified battery back up system, which is described and illustrated in association with Figure 3 at Column 4, lines 13-63. As illustrated in Figure 3, the battery back up system (as part of the bus isolation circuit 75) comprises numerous components (comparator 135, boost regulator 145, battery switch 140, battery 130, voltage selectors 150, 155, and voltage regulator 160) which work together to provide "high and low voltage outputs on lines 165 and 170 with the high voltage on line 165 being about 5 volts and the low voltage on line 170 being about 3.3 volts." See the Humpherys Patent at Column 4, lines 26-44. These voltage outputs on lines 165 and 170 are available for continued functioning of remote server management board 55 while the server 10 is without power or otherwise not operating properly.

To provide the high voltage on line 165, voltage selector 150 selects a higher of the voltage on the 12 volt supply line 120 and the battery 130 while the voltage selector 155 selects the higher of the voltage on the 5 volt supply line 125 and the battery 130. A voltage regulator 160, coupled to the voltage selectors 150, 155, provides the high voltage (e.g., 5 volts) and low voltage (3.3 volts) on lines 165, 170, respectively. See the Humpherys Patent at Column 4, lines 32-36.

This power back-up system (of the bus isolation circuit 75 of the remote server management board 55, and not of server 10) is activated via a battery switch 140 only when a voltage on a 5 volt supply line 125 from PCI connector 70 of server 10 drops below a threshold, thereby indicating that the server has lost power or is not operating properly. See the Humpherys Patent at Column 4, lines 20-25. The battery 130 (activated via battery switch 140) is charged via 5 volt supply line 125 and boost regulator 145 (see the Humpherys Patent at Column 4, lines 29-33).

Accordingly, contrary to the assertions in the Office Action regarding the role of voltage selectors 150 and 155 in Figure 3 of the Humpherys Patent, Appellants' respectfully submit that it is clear from the specification of the Humpherys Patent that the remote server

management board 55, and particularly the components of the battery back up system (comparator 135, boost regulator 145, battery 130, battery switch 140, voltage selector 150, voltage selector 155, voltage regulator 160 in Figure 3) of the bus isolation circuit 75 (illustrated in Figure 3) do not control the power states of the server 10, but rather are directed to maintaining backup power to microprocessor 80 and other components of remote server management board 55 regardless of and independent of the power state of the server 10.

Accordingly, Appellants respectfully submit that the Humpherys Patent fails to teach or suggest an electronic switching mechanism disposed on a server card and configured to control three power states (e.g., fully operational, standby, and shutdown) of the server card, as recited in Appellants' independent claim 13. Moreover, by teaching a battery backup supply for a remote management server board 55, and not for a server 10, the Humpherys Patent actually teaches away from Appellants' independent claim 13.

In addition to the previously stated deficiencies of the Humpherys Patent regarding Appellants' independent claim 13, it was admitted in the Office Action that the Humpherys Patent fails to disclose a server card, as recited in Appellants' independent claim 13.

The Wierzbicki Patent fails to cure the deficiencies of the Humpherys Patent.

First, the Wierzbicki Patent fails to disclose a server card in the manner described in Appellants' specification as a high density computing element and as recited in the claim limitations of Appellants' claim 13.

Instead, the Wierzbicki Patent discloses a compute element 11 slidably disposed in a stacked relationship in rack console 31 (see the Wierzbicki Patent at Figures 1-2, Column 6, lines 16-21, and Column 1, lines 31-42). Each compute element 11 has a size of 2U, 1U, or 4U, which refers to the standard dimensions of rack servers, i.e., servers that fit in a rack (see the Wierzbicki Patent at Column 5, line 63 – Column 6, line 3). The size designation U refers to a height of 1.75 inches, so that a rack server having a size of 1U would be about 1.75 inches thick while a rack server having a size of 2U would be about 3.5 inches thick, and so on. See the article titled "The Blade Server Debate", by Lamont Wood in Cutting Edge Server Farms, *June 01, 2002,* available at http://www.ddj.com/dept/architect/184411655 printed on 3-1-07 , a copy of which is provided in the Evidence Appendix.

In addition, in the Wierzbicki Patent compute element 11 includes bulkier components, such as a block of multiple fan assemblies 51 (e.g., eight fan assemblies arranged in a 2 x 4 configuration as shown in Figure 3 as disclosed at the Wierzbicki Patent at Column 7, lines 6-18). In combination with the descriptive rack sizing information noted above, the placement of fan assemblies 51(e.g., cooling units) on compute element 11 puts compute element 11 into the category of a rack server, in a manner consistent with how the term rack server is used by those skilled in the art.

To this end, numerous articles from 2002 (and forward in time) heralded the impact of high density computing environments on the computing industry, and describe the basic distinctions between high density computing environments, such as blade servers, and the more conventional rack servers. In these articles, a blade server is described as having one or more processors, memory, and network connections and with numerous blade servers fitting into the space formerly occupied by one or two rack servers. Moreover, in almost every instance, server cards in a high density computing environment (such as blade servers) are described as having access, via a server chassis, to resources shared with other server cards within that environment. These **shared resources** include power supplies, buses, and **cooling units**, which are provided on the chassis of the server rack. For example, see the article titled "Cutting edge?" dated March 9, 2002, available at http://www.information-age.com/article/2002/march/cutting_edge , a copy of which is provided in the Evidence Appendix.

Accordingly, with this understanding of a server card defining a high density computing environment, Appellants respectfully submit that the Wierzbicki Patent fails to teach or suggest a server card in a method of managing power for at least one server card, as recited in Appellants' independent claim 13.

Appellants' have defined, in both the description and Figures of the application, a server card and a server chassis in which certain bulkier resources, such as a cooling unit, are provided on the server chassis to be shared among multiple server cards that are removably mounted within the server chassis. Those shared resources are not mounted on the individual server cards for the very purpose of reducing the size and simplifying the design of the server cards to achieve higher density computing (see Appellant's specification at page 1, lines 13-22) by placing many more blade servers (e.g., 10 to 20) in the place formerly occupied by one

or two rack servers. Achieving a low profile for the server card in the high density computing environment via omitting these bulkier components (e.g., cooling units, power supplies, cabling) enables, in part, the hot swapping feature of the server card that allows considerably more convenient insertion and removal of the server card relative to the more cumbersome insertion and removal of a conventional rack server. See Appellant's specification at page 1, lines 23-25.

For these reasons, the Wierzbicki Patent fails to teach or suggest the claim limitations of a method of managing power for at least one server card, as recited in Appellants' independent claim 13.

Even if the Wierzbicki Patent did disclose a method of managing power for at least one server card in the manner defined by Appellants in their specification, which it does not as demonstrated above, the Wierzbicki Patent also fails to disclose an electronic switching mechanism in the manner recited in Appellants' independent claim 13, and therefore additionally fails to cure the deficiencies of the Humpherys Patent regarding Appellants' independent claim 13.

In particular, the Wierzbicki Patent discloses: (1) an element controller 91 to control various power states of compute element 11, among other functions (see the Wierzbicki Patent at Column 9, line 62 – Column 10, line 21); and (2) a power button 53 to indicate and help switch power states of the compute element 11 (e.g., Column 10, line 29 – Column 13, line 23, which generically describes the various power states of an ACPI specification). However, the Wierzbicki Patent fails to disclose an electronic switching mechanism controlling power states (fully operational, standby, and shutdown) in which a system power and a standby power are enabled, and disabled, respectively, in the respective power states, as recited in Appellants' independent claim 13.

Because the Humpherys Patent fails to teach or suggest the claim limitation of a server card in Appellants' claim 13, and the Wierzbicki Patent fails to teach or the suggest claim limitation of a server card in Appellants' claim 13, one cannot combine the Humpherys Patent and the Wierzbicki Patent to arrive at Appellant's independent claim 13. Likewise, because the Humpherys Patent fails to teach or suggest the claim limitation of an electronic switching mechanism in the manner recited in Appellants' claim 13, and the Wierzbicki Patent fails to teach or suggest the claim limitation of an electronic switching mechanism in

the manner recited in Appellants' claim 13, one cannot combine the Humpherys Patent and the Wierzbicki Patent to arrive at Appellant's independent claim 13.

Moreover, the Office Action asserted that one skilled in the art would be motivated to combine the Humpherys Patent and the Wierzbicki Patent. In particular, in the Office Action mailed on October 10, 2006, it was asserted that an advantage of the Wierzbicki Patent is the ability to produce a computing element that is cheaper and friendlier than the prior art, and that it would have been obvious to modify the Humpherys Patent with the server card as taught by the Wierzbicki Patent with the motivation to modify being to cut costs and increase user control and understandability.

This alleged motivation amounts to identifying a "shared advantage" between the two reference patents with the shared advantage being to reduce costs and make the devices easier to use. However, this "shared advantage" would potentially justify the combination of any two references, regardless of how unrelated the two reference patents are, because nearly all improvements are directed to making something cheaper, understandable, and user friendly. A motivation this broad omits the core aspect of why or how one skilled in the art would look to prior art references, which is to find a solution to a problem to be solved. In the instance of Appellants' claimed invention, the issue of controlling the power states of the server card itself is a problem distinct from providing a power backup system for a remote server management board 55 (and not for server 10) as in the Humpherys Patent, while the Wierzbicki Patent is directed to a power button 53.

For these reasons, one would not combine the Humpherys Patent and the Wierzbicki Patent and even if they did so, they would not arrive at Appellants' independent claim 13. Accordingly, the Humpherys Patent and the Wierzbicki Patent fail to teach or suggest Appellants' independent claim 13, and therefore Appellants respectfully submit that claim 13 is patentable and allowable over the Humpherys Patent and the Wierzbicki Patent.

III. Rejection of Claims 9-10 under 35 U.S.C. § 103 (a) as being unpatentable over the Humpherys Patent, in view of the Wierzbicki Patent and the Dunstan Publication

Appellants' dependent claims 9 and 10 are believed to be allowable based on their dependency from patentably distinct independent claim 1, which is believed to be allowable for the above-stated reasons.

In addition, the Dunstan Publication fails to cure the deficiencies of the Humpherys Patent and the Wierzbicki Patent, as the Dunstan Publication also fails to teach or suggest the claim limitations of Appellants' independent claim 1, including, an electronic switching mechanism disposed on the server card, including at least one of blade server and a brick server, for controlling the power states (fully operational, standby, and shutdown) of the server card.

For these reasons, Appellants respectfully submit that Appellant's dependent claims 9 and 10 are not taught or suggested by the Humpherys Patent, the Wierzbicki Patent and/or the Dunstan Publication.

Accordingly, Appellants respectfully request that the above 35 U.S.C. 103 rejections to claims 1-2, 9-10, and 12-13 based on the Humpherys Patent, the Wierzbicki Patent, and/or the Dunstan Publication be reconsidered and withdrawn, and that these claims be allowed.

CONCLUSION

For the above reasons, Appellants respectfully submit that the cited references neither anticipate nor render obvious claims 1-2, 9-10, and 12-13 of the pending Application. The pending claims distinguish over the cited references, and therefore, Appellants respectfully submit that the rejections must be withdrawn, and respectfully request the Examiner be reversed and claims 1-2, 9-10, and 12-13 be allowed.

Any inquiry regarding this Response should be directed to either David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854 or Paul S. Grunzweig at Telephone No. (612) 767-2504, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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CLAIMS APPENDIX

1. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis and comprising at least one of a blade server and a brick server; and

an electronic switching mechanism disposed on the server card and configured to cause three power states of the server card including:

a fully-operational state in which a system power of the server card is enabled and a standby power of the server card is enabled;

a standby state in which the system power of the server card is disabled and the standby power of the server card is enabled; and

a shutdown state in which the system power of the server card is disabled and the standby power of the server card is disabled.

2. (Previously Presented) The server of claim 1 wherein the server card further comprises:

a server management circuitry configured for communication with the electronic switching mechanism for managing the power states of the server card.

3. (Previously Presented) The server of claim 1 wherein the electronic switching mechanism comprises:

a tristate electronic switch including;

a first switch state configured to enable the system power of the server card and to enable the standby power of the server card;

a second switch state configured to disable the system power of the server card and to enable the standby power of the server card; and

a third switch state configured to disable the system power of the server card and to disable the standby power of the server card.

4. (Previously Presented) The server of claim 1 wherein the electronic switching mechanism comprises:

a first electronic two-state switch and a second push button switch disposed on the server card and together defining three power states of the server card including:

a first fully operational state of the server card corresponding to the first electronic switch being closed and the second push button switch being enabled, thereby enabling both the system power of the server card and the standby power of the server card, and the enabled second push button switch activating a locking mechanism to physically secure the server card relative to the chassis;

a second standby state of the server card corresponding to the first electronic switch being open and the second push button being enabled, thereby disabling the system power of the server card and enabling the standby power of the server card, and enabled second push button switch activating the locking mechanism to physically secure the server card relative to the chassis; and

a third full shutdown state corresponding to the first electronic switch being open and the push button being disabled, thereby disabling both the system power of the server card and the standby power of the server card and deactivating the locking mechanism to physically release the server card relative to the chassis.

5. (Previously Presented) The server of claim 1 wherein the electronic switching mechanism comprises:

a first latch switch and a second latch switch disposed on the server card with each latch switch configured for removably securing the server card to the chassis and configured for managing three power states of the server card including:

a fully operational state corresponding to the first latch switch being in a closed position physically securing the server card relative to the chassis and electronically causing the system power of the server card to be enabled and corresponding to the second latch switch being in a closed position physically securing the server card relative to the chassis and electronically causing the standby power of the server card to be enabled;

a standby state corresponding to the first latch switch being in an open position physically releasing the server card relative to the chassis at the first latch switch and electronically causing the system power of the server card to be disabled, and corresponding to the second latch switch being in a closed position physically

securing the server card relative to the chassis and electronically causing the standby power of the server card to be enabled; and

a shutdown state corresponding to the first latch switch is in an open position physically releasing the server card relative to the chassis and electronically causing the system power of the server card to be disabled, and corresponding to the second latch switch is in an open position physically releasing the server card relative to the chassis and causing the standby power of the server card to be disabled, thereby permitting removal of the server card relative to the chassis.

6. (Previously Presented) The server of claim 1 wherein the electronic switching mechanism comprises:

a first electronic two-state switch and a second latch switch disposed on the at least one server card and together defining three power states of the server card including:

a first fully operational state of the server card corresponding to the first electronic switch being closed and the second latch switch being closed, thereby enabling both the system power of the server card and the standby power of the server card with the second latch switch physically securing the server card to the chassis;

a second standby state of the server card corresponding to the first electronic switch being open and the second latch switch being closed, thereby disabling the system power of the server card and enabling the standby power of the server card with the second latch switch physically securing the server card to the chassis; and

a third full shutdown state corresponding to the first electronic switch being open and the second latch switch being open, thereby disabling both the system power of the server card and the standby power of the server card with the second latch switch permitting physical removal of the server card relative to the chassis.

7. (Original) The server of claim 1 and further comprising:

an locking mechanism disposed on the server card and configured to be in communication with the electronic switching mechanism so that when the electronic switching mechanism causes the server card to be in the fully operational state and the

standby state, the electronic locking mechanism is electrically activated to physically prevent removal of the server card from the chassis, and when the electronic switching mechanism causes the server card to be in the fully shutdown state, the locking mechanism is electrically deactivated to permit removal of the server card from the chassis.

8. (Original) The server of claim 7 and further comprising:

a management server card removably insertable into the chassis and configured for communication with the server card, and configured to electrically activate the locking mechanism when the server card is in the fully shutdown state to physically lock the server card to the chassis.

9. (Original) The server of claim 1 and further comprising:

an operating system stored in a memory of the server card; and

a watchdog timer in communication with the operating system and configured to be activated upon a transition from the fully operational state of the server card to the standby state of the server card and configured to cause the operating system to shut down, prior to the system power of the server card being disabled, in the event that operating system does not shutdown within a predetermined period of time.

10. (Original) The server of claim 9 and further comprising:

a server management circuitry in communication with the watchdog timer and configured to monitor progress of the shutdown of the operating system.

11. (Original) The server of claim 1 wherein the chassis includes a system power and a standby power and the electronic switching mechanism is electrically coupled to the system power and the standby power of the chassis for activating the system power and the standby power of the server card via the electronic switching mechanism.

12. (Original) The server of claim 1 wherein the server card comprises an electronic user interface configured for communication with the switching mechanism to cause switching between the power states of the server card.

13. (Previously Presented) A method of managing power for at least one server card, the method comprising:

removably inserting at least one server card within a server chassis;

operating an electronic switching mechanism on the at least one server card to alternately:

activate, via a first state of the electronic switching mechanism, a fully-operational state of the at least one server card, in which a system power of the at least one server card is enabled and a standby power of the at least one server card is enabled;

activate, via a second state of the electronic switching mechanism, a standby state of the at least one server card, in which a system power of the at least one server card is disabled and a standby power of the at least one server card is enabled; and

activate, via a third state of the electronic switching mechanism, a fully shutdown state of the at least one server card, in which a system power of the at least one server card is disabled and a standby power of the at least one server card is disabled.

14. (Previously Presented) The method of claim 13 and further comprising:

preventing removal of the at least one server card from the server chassis during the fully operational state and the standby state of the at least one server card by activating at least one of an electrically activatable locking mechanism and a mechanically activatable locking mechanism for physically securing the at least one server card relative to the server chassis.

15. (Previously Presented) The method of claim 13 wherein operating the electronic switching mechanism comprises:

operating a tri-state electronic switch in which a first position of the tristate switch corresponds to the fully operational state of the at least one server card, a second position of the tristate switch corresponds to the standby state of the at least one server card, and a third position of the tristate switch corresponds to the shutdown state of the at least one server card.

16. (Previously Presented) The method of claim 13 wherein operating the electronic switching mechanism comprises:

operating a two-state electronic switch and an unlock button switch to:

activate the fully operational state of the at least one server card by closing the two-state switch to enable the system power of the at least one server card and position the unlock button switch to enable the standby power of the at least one server card and to physically secure the at least one server card relative to the server chassis,

activate the standby state of the at least one server card by opening the two-state switch to disable the system power of the at least one server card and position the unlock button to enable the standby power of the at least one server card and to physically secure the at least one server card relative to the server chassis; and

activate the shutdown state of the at least one server card by opening the two-state switch to disable the system power of the at least one server card and position the unlock button to disable the standby power of the at least one server card and to physically release the at least one server card relative to the server chassis.

17. (Previously Presented) The method of claim 13 wherein operating the electronic switching mechanism of the at least one server card comprises:

activating the fully operational state of the at least one server card by closing a first latch switch of the at least one server card to physically secure the at least one server card relative to the server chassis and to electronically cause the system power of the at least one server card to be enabled and by closing a second latch switch of the at least one server card relative to the server chassis and to cause the standby power of the at least one server card to be enabled, thereby preventing removal of the at least one server card relative to the server chassis;

activating the standby state of the at least one server card by opening the first latch switch of the at least one server card and electronically causing the system power of the at least one server card to be disabled, and by closing the second latch switch of the at least one server card to physically secure the at least one server card relative to the server chassis and to cause the standby power of the at least one server

card to be enabled, thereby preventing removal of the at least one server card relative to the server chassis; and

activating the fully shutdown state of the at least one server card by opening the first latch switch of the at least one server card to physically release the at least one server card relative to the server chassis and to electronically cause the system power of the at least one server card to be disabled, by opening the second latch switch of the at least one server card to physically release the at least one server card relative to the server chassis and to electronically cause the standby power of the at least one server card to be disabled, and thereby permitting removal of the at least one server card relative to the server chassis.

18. (Previously Presented) The method of claim 13 wherein operating the electronic switching mechanism to activate a standby state comprises:

requesting, via a power management module, disabling the system power of the at least one server card in response to a power event of the switching mechanism transitioning from the fully shutdown state to the standby state, thereby triggering a shutdown of an operating system of the at least one server card;

shutting down the system power of the at least one server card after a shutdown of the operating system; and

triggering, via a watchdog timer, disabling the system power of the at least one server card within a predetermined period of time in the event that the operating system fails to shutdown.

19. (Previously Presented) A power state manager for a server card comprising:

means for electronically disabling and enabling a system power and a standby power of a server card to manage three power states of the server card; and

means for physically securing the server card relative to the chassis in a first power state when the system power of the server card and the standby power of the server card are enabled and in a second power state when the standby power is enabled.

20. (Previously Presented) The power state manager of claim 19 wherein the means for electronically disabling and enabling comprises at least one of:

an electronic tristate switch;

a pair of two-state switches;

a two-state switch and a push button lock; and

a pair of latch switches; and

wherein the means for enabling and disabling comprises:

a watchdog timer configured to perform a shutdown of the system power in the event that an operating system of the server card fails to shutdown upon transition between the three different power states of the server card.

21. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis;

a tristate electronic switch disposed on the server card and including:

a first switch state to cause the server card to be in a fully operational state in which a system power of the server card is enabled and in which a standby power of the server card is enabled;

a second switch state to cause the server card to be in a standby state in which the system power of the server card is disabled and the standby power of the server card is enabled; and

a third switch state to cause the server card to be in a shutdown state in which the system power of the server card is disabled and the standby power of the server card is disabled.

22. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis;

an electronic switching mechanism disposed on the server card and comprising a first electronic two-state switch and a second push button switch disposed on the at least one server card and together defining three power states of the server card including:

a first fully operational state of the server card corresponding to the first electronic two-state switch being closed and the second push button switch being

enabled, thereby enabling both a system power of the server card and a standby power of the server card, and the enabled second push button switch activating a locking mechanism to physically secure the server card relative to the chassis;

a second standby state of the server card corresponding to the first electronic two-state switch being open and the second push button being enabled, thereby disabling the system power of the server card and enabling the standby power of the server card, and the enabled second push button switch activating the locking mechanism to physically secure the server card relative to the chassis; and

a third full shutdown state corresponding to the first electronic two-state switch being open and the second push button being disabled, thereby disabling both the system power of the server card and the standby power of the server card and deactivating the locking mechanism to physically release the server card relative to the chassis.

23. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis;

an electronic switching mechanism disposed on the server card and comprising a first latch switch and a second latch switch with each respective latch switch configured for removably securing the server card to the chassis and configured for managing three power states of the server card including:

a fully operational state corresponding to the first latch switch being in a closed position physically securing the server card relative to the chassis and electronically causing a system power of the server card to be enabled and corresponding to the second latch switch being in a closed position physically securing the server card relative to the chassis and electronically causing a standby power of the server card to be enabled;

a standby state corresponding to the first latch switch being in an open position physically releasing the server card relative to the chassis at the first latch switch and electronically causing the system power of the server card to be disabled, and corresponding to the second latch switch being in a closed position physically

securing the server card relative to the chassis and electronically causing the standby power of the server card to be enabled; and

a shutdown state corresponding to the first latch switch being in an open position physically releasing the server card relative to the chassis and electronically causing the system power of the server card to be disabled, and corresponding to the second latch switch being in an open position physically releasing the server card relative to the chassis and causing the standby power of the server card to be disabled, thereby permitting removal of the server card relative to the chassis.

24. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis;

an electronic switching mechanism disposed on the server card and comprising a first electronic two-state switch and a second latch switch disposed on the at least one server card and together defining three power states of the server card including:

a first fully operational state of the server card corresponding to the first electronic switch being closed and the second latch switch being closed, thereby enabling both a system power of the server card and a standby power of the server card with the second latch switch physically securing the server card to the chassis;

a second standby state of the server card corresponding to the first electronic switch being open and the second latch switch being closed, thereby disabling the system power of the server card and enabling the standby power of the server card with the second latch switch physically securing the server card to the chassis; and

a third full shutdown state corresponding to the first electronic switch being open and the second latch switch being open, thereby disabling both the system power of the server card and the standby power of the server card with the second latch switch permitting physical removal of the server card relative to the chassis.

25. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis;

an electronic switching mechanism disposed on the server card and configured to cause three power states of the server card including

a fully-operational state in which a system power of the server card is enabled and a standby power of the server card is enabled;

a standby state in which the system power of the server card is disabled and the standby power of the server card is enabled; and

a shutdown state in which the system power of the server card is disabled and the standby power of the server card is disabled; and

a locking mechanism disposed on the server card and configured to be in communication with the electronic switching mechanism so that when the electronic switching mechanism causes the server card to be in the fully operational state and the standby state, the electronic locking mechanism is electrically activated to physically prevent removal of the server card from the chassis, and when the electronic switching mechanism causes the server card to be in the fully shutdown state, the locking mechanism is electrically deactivated to permit removal of the server card from the chassis.

26. (Previously Presented) The server of claim 25 and further comprising:

a management server card removably insertable into the chassis and configured for communication with the server card, and configured to electrically activate the locking mechanism when the server card is in the fully shutdown state to physically lock the server card to the chassis.

27. (Previously Presented) A server comprising:

a server card that is removably insertable into a server chassis, the server chassis including a system power and a standby power;

an electronic switching mechanism disposed on the server card and electrically coupled to the system power and the standby power of the chassis, the electronic switching mechanism configured to cause three power states of the server card including:

a fully-operational state in which a system power of the server card is enabled and a standby power of the server card is enabled;

a standby state in which the system power of the server card is disabled and the standby power of the server card is enabled; and

a shutdown state in which the system power of the server card is disabled and the standby power of the server card is disabled.

28. (Previously Presented) A method of managing power for a server card, the method comprising:

removably inserting at least one server card within a server chassis;

operating an electronic switching mechanism on the at least one server card to alternately:

activate, via a first state of the electronic switching mechanism, a fully-operational state of the at least one server card, in which a system power of the at least one server is enabled and a standby power of the at least one server card is enabled;

activate, via a second state of the electronic switching mechanism, a standby state of the at least one server card, in which a system power of the at least one server card is disabled and a standby power of the at least one server card is enabled, wherein activating the standby state comprises:

requesting, via a power management module, disabling the system power of the at least one server card in response to a power event of the switching mechanism transitioning from the fully shutdown state to the standby state, thereby triggering a shutdown of an operating system of the at least one server card;

shutting down the system power of the at least one server card after a shutdown of the operating system; and

triggering, via a watchdog timer, disabling the system power within a predetermined period of time in the event that the operating system fails to shutdown; and

activate, via a third state of the electronic switching mechanism, a fully shutdown state of the at least one server card, in which a system power of the at least one server card is disabled and a standby power of the at least one server card is disabled.

EVIDENCE APPENDIX

A copy of each article listed below is electronically attached with this brief.

A) "The Blade Server Debate", by Lamont Wood in Cutting Edge Server Farms, *June 01, 2002,* available at http://www.ddj.com/dept/architect/184411655 (5 pages)

B) "Cutting edge?", dated *March 9, 2002*, available at http://www.information-age.com/article/2002/march/cutting_edge (6 pages)

C) "What is a blade server" at IBM System, BladeCenter, available at www-03.ibm.com/servers/eserver/bladecenter/blade_servers/index.html (7 pages)

RELATED PROCEEDINGS APPENDIX

None.